CAUTION READ THIS MANUAL CAREFULLY TO DIAGNOSE TROUBLE CORRECTLY BEFORE OFFERING SERVICE .

SERVICE MANUAL

Colour Television

Haier model:
DTA-1481
Customer model:
TCR13

- **FEATURES**

- **DVD-TV 14” COMBO**
- **AUTO TUNE/181 CHANNES**
- **DVD/VCD/SVCD/CD/CD-R/CD-RW/JPEG/MP3 COMPATIBLE**
- **FORMATO DE VIDEO 4:3PS、4:3LB**
- **DOLBY AC-3 DECODE**
- **PANATAL LOCK**
- **ATSC TUNER**

CONTENTS

1. SAFETY

1. The design of this product contains special hardware, many circuits and components especially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.

2. Alterations of the design or circuitry of the products should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.

3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. Electrical components having such features are identified by shading on the schematics and by (!) on the parts list in Service manual. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list of Service manual may cause shock, fire, or other hazards

4. **Don't short between the LIVE side ground and ISOLATED (NEUTRAL) side ground or EARTH side ground when repairing**. Some model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE: (⏥) side GND, ISOLATED (NEUTRAL): (⊥) side GND and EARTH: (⏚) side GND. Don't short between the LIVE side GND and ISOLATED (NEUTRAL) side GND or EARTH side GND and never measure with a measuring apparatus (oscilloscope etc.) the LIVE side GND and ISOLATED (NEUTRAL) side GND or EARTH side GND at the same time. If above note will not be kept, a fuse or any parts will be broken.

5. If any repair has been made to the chassis, it is recommended that the B1 setting should be checked or adjusted (See ADJUSTMENT OF B1 POWER SUPPLY).

6. The high voltage applied to the picture tube must conform to that specified in Service manual. Excessive high voltage can cause an increase in X-Ray emission, arcing and possible component damage, therefore operation under excessive high voltage conditions should be kept to a minimum, or should be prevented. If severe arcing occurs, remove the AC power immediately and determine the cause by visual inspection (incorrect installation, cracked or melted high voltage harness, poor soldering, etc.). To maintain the proper minimum level of soft X-Ray emission, components in the high voltage circuitry including the picture tube must be the exact replacements or alternatives approved by the manufacturer of the complete product.

7. Do not check high voltage by drawing an arc. Use a high voltage meter or a high voltage probe with a VTVM. Discharge the picture tube before attempting meter connection, by connecting a clip lead to the ground frame and connecting the other end of the lead through a 10kΩ 2W resistor to the anode button.

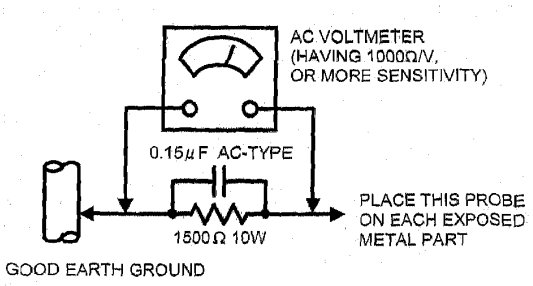
8. When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.

PRECAUTIONS

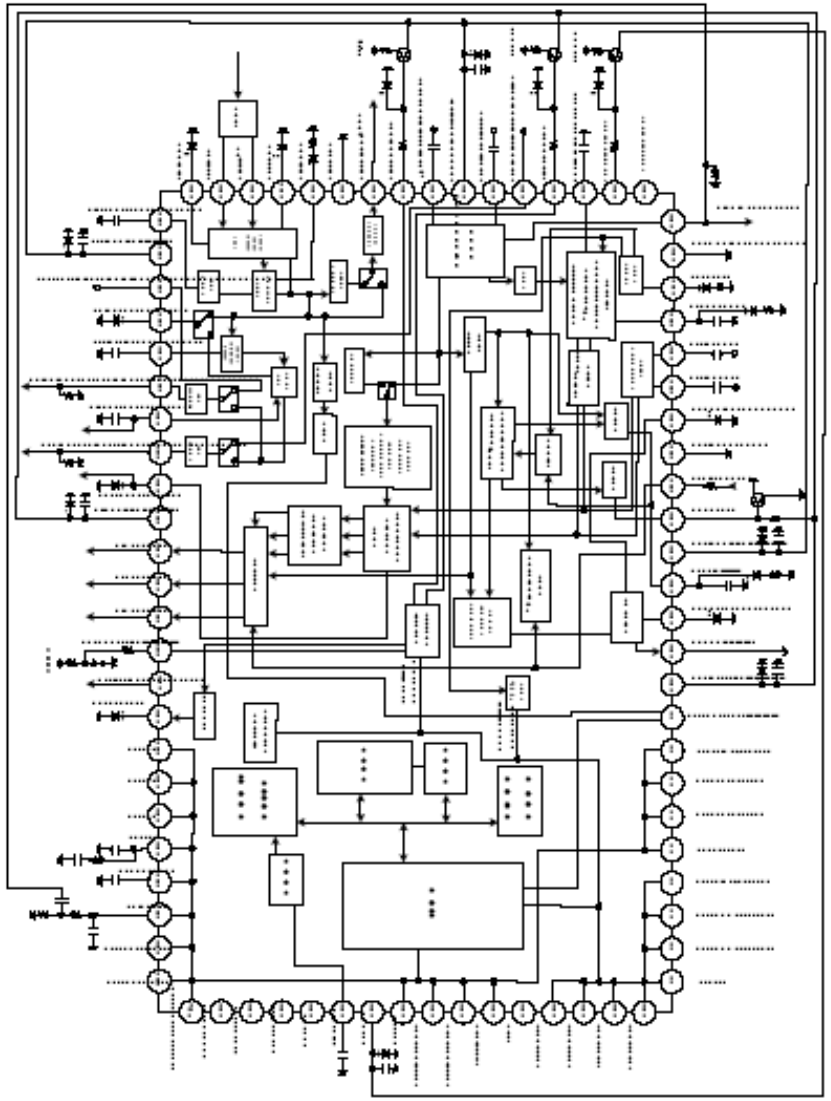
9. Isolation Check
   (Safety for Electrical Shock Hazard)
   After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, video/audio input and output terminals, Control knobs, metal cabinet, screw heads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.
10. The surface of the TV screen is coated with a thin film which can easily be damaged. Be very careful with it when handle the TV. Should the TV screen become soiled, wipe it with a soft dry cloth. Never rub it forcefully. Never use any cleaner or detergent on it.

(1) Dielectric Strength Test
The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 3000V AC (r.m.s.) for a period of one second.
(…Withstand a voltage of 1100V AC (r.m.s.) to an appliance rated up to 120V, and 3000V AC (r.m.s.) to an appliance rated 200V or more, for a period of one second.)
This method of test requires test equipment not generally found in the service trade.

(2) Leakage Current Check
Plug the AC line cord directly into the AC outlet (do not use line isolation transformers during this check). Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.).
However, in tropical area, this must not exceed 0.2mA AC (r.m.s.).
●Alternate Check Method
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1000 ohms per volt or more sensitivity in the following manner. Connect a 1500Ω 10W resistor paralleled by a 0.15μF AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.). Measure the AC voltage across the resistor with the AC voltmeter. Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.).
However, in tropical area, this must not exceed 0.3V AC (r.m.s.).
This corresponds to 0.2mA AC (r.m.s.)



2. Block diagram R2J10165GC series with stereo intercarrier sound demodulator



3. REPLACEMENT OF MEMORY IC

1. MEMORY IC.

This TV uses memory IC. In the memory IC are memorized data for correctly operating the video and deflection circuits.

2. PROCEDURE FOR REPLACING MEMORY IC

(1) Power off
Switch the power off and unplug the power cord from AC outlet.

(2) Replace IC
Be sure to use memory IC written with the initial data values.

(3) Power On
Plug the power cord into the AC outlet and switch the power on.

(4) Check and set SYSTEM default value:
1) Press “MENU” → “8”→”8”→”9”→”3” buttons in sequence to enter into factory status.
2) If the memory IC haven’t been written with the initial data, press [Program+] / [Program-] to select item INIT and press [VOLUME+] / [VOLUME-] to start initialize memory IC.
3) Check the setting value of the SYSTEM default value of Table below. If the value is different, select items by [Program+] / [Program-] keys and set value by [VOLUME+] / [VOLUME-] keys.
4) Press “EXIT” button to return to the normal screen.

4. SERVICE ADJUSTMENT

Specific operation: use remote controller

Press “MENU” → “8”→”8”→”9”→”3” buttons in sequence to enter into factory mode.Press “MENU” to enter into next factory menu.

Press [Program+] / [Program-] to select items and press [VOLUME+] / [VOLUME-] key, to make data adjustment of corresponding factory menus.

Press “EXIT” key to exit factory mode.

Focus adjustment

1. Receive a crosshatch signal.
2. While watching the screen, adjust the FOCUS VR on the FBT to make the vertical and horizontal lines as fine and sharp as possible.

Geometrical adjustment

Receive NTSC standard complete pattern signal.

Adjustment steps：

a) Adjust V SC, S emendation
b) Adjust V SIZE, to get 92% of vertical picture contents would be displayed on CRT.
c) Adjust V POS, the centre horizontal line corresponds to CRT vertical centre.
d) Adjust V LIN, to the linearity of P card field is in proper condition.
e) Adjust H PHASE, to get the picture horizontal centre correspond to CRT horizontal centre.

Receive NTSC signal and repeat above adjustment.

AGC Adjustment

Receive 60dBμ (1mV) VH colour bar pattern signal.

Select RF AGC item.

Adjust value, to noise reduce gradually and just disappeared point.

CRT cut off and white balance adjustment

a) CRT cut off adjustment

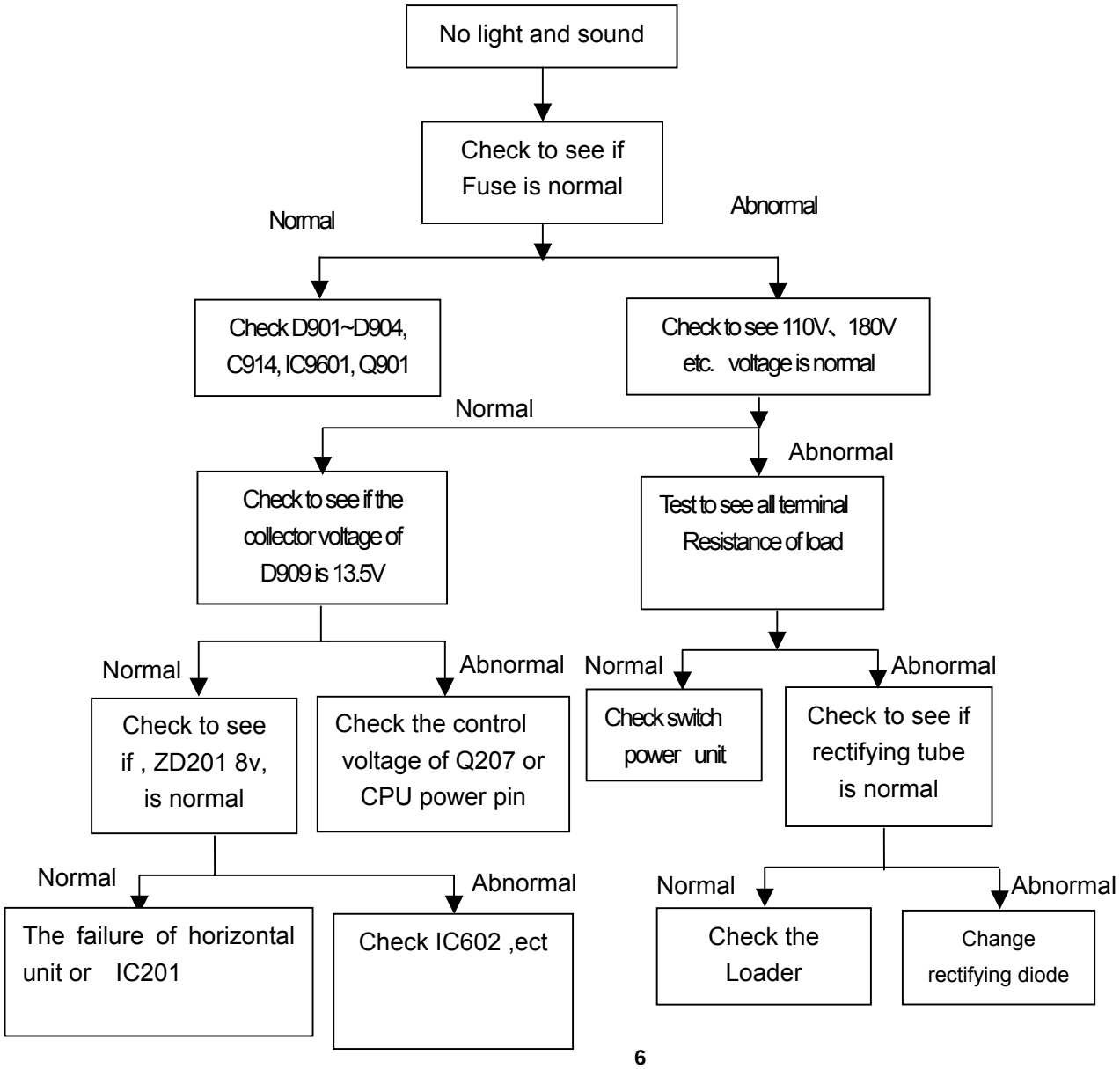
1. Select item VG2B, then adjust value to 32.
2. PRESS “MENU” key to page 2, when the screen shows”VK” adjust the SCREEN control on Fly back transformer to make the screen show alternating flashing characters to darkle.

b) White balance adjustment

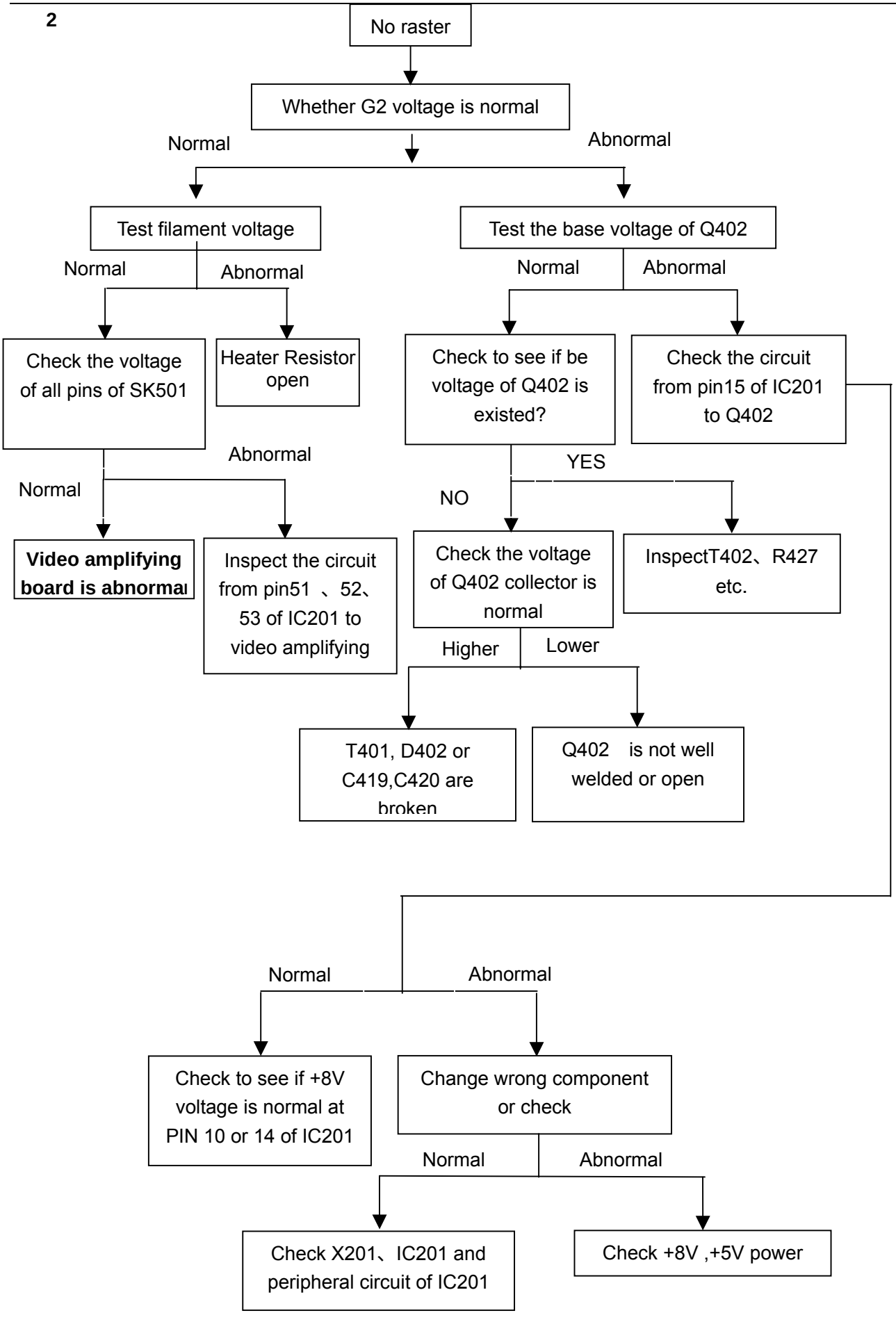
1. Receive a Black and White pattern.
2. Adjust RC, GC, BC,RD,BD items to get colour temperature 9300K ±5 JND.

A3. Error Detection Process

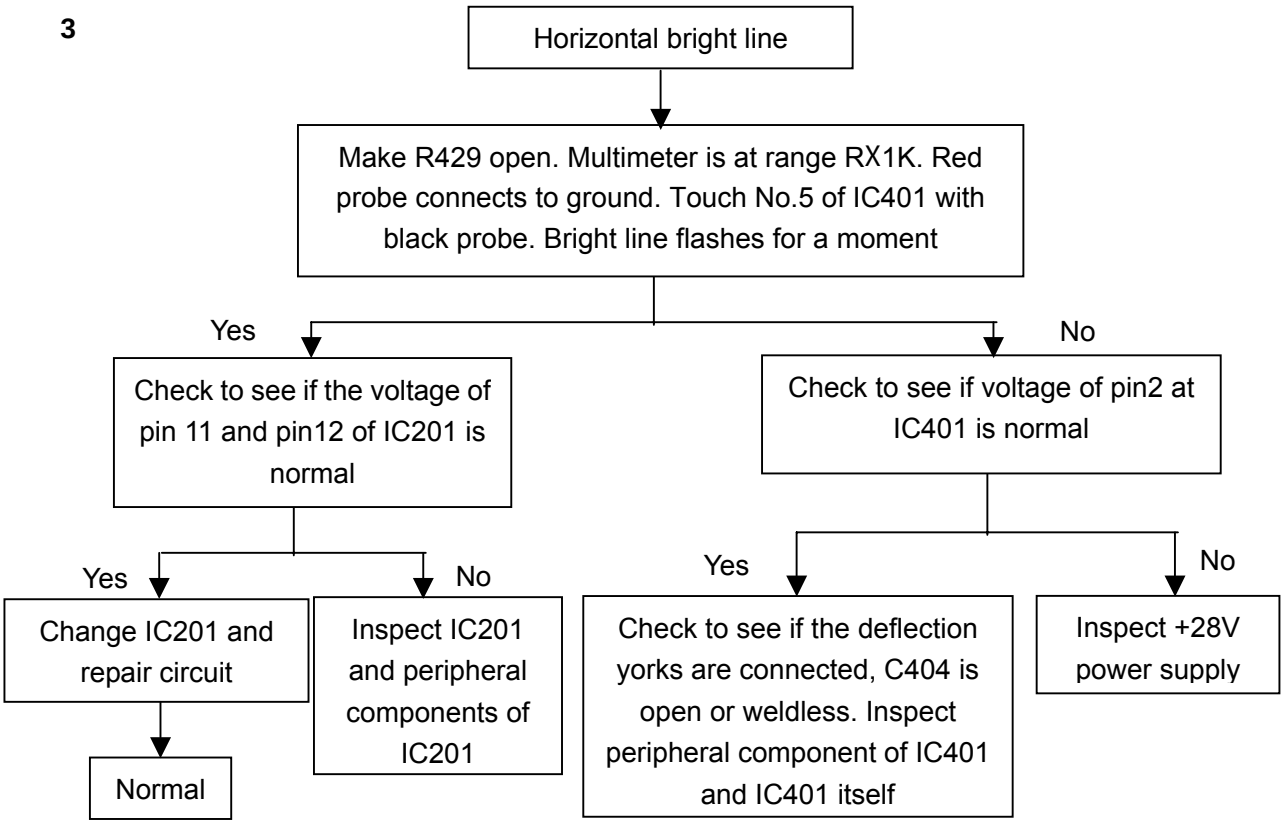
1.



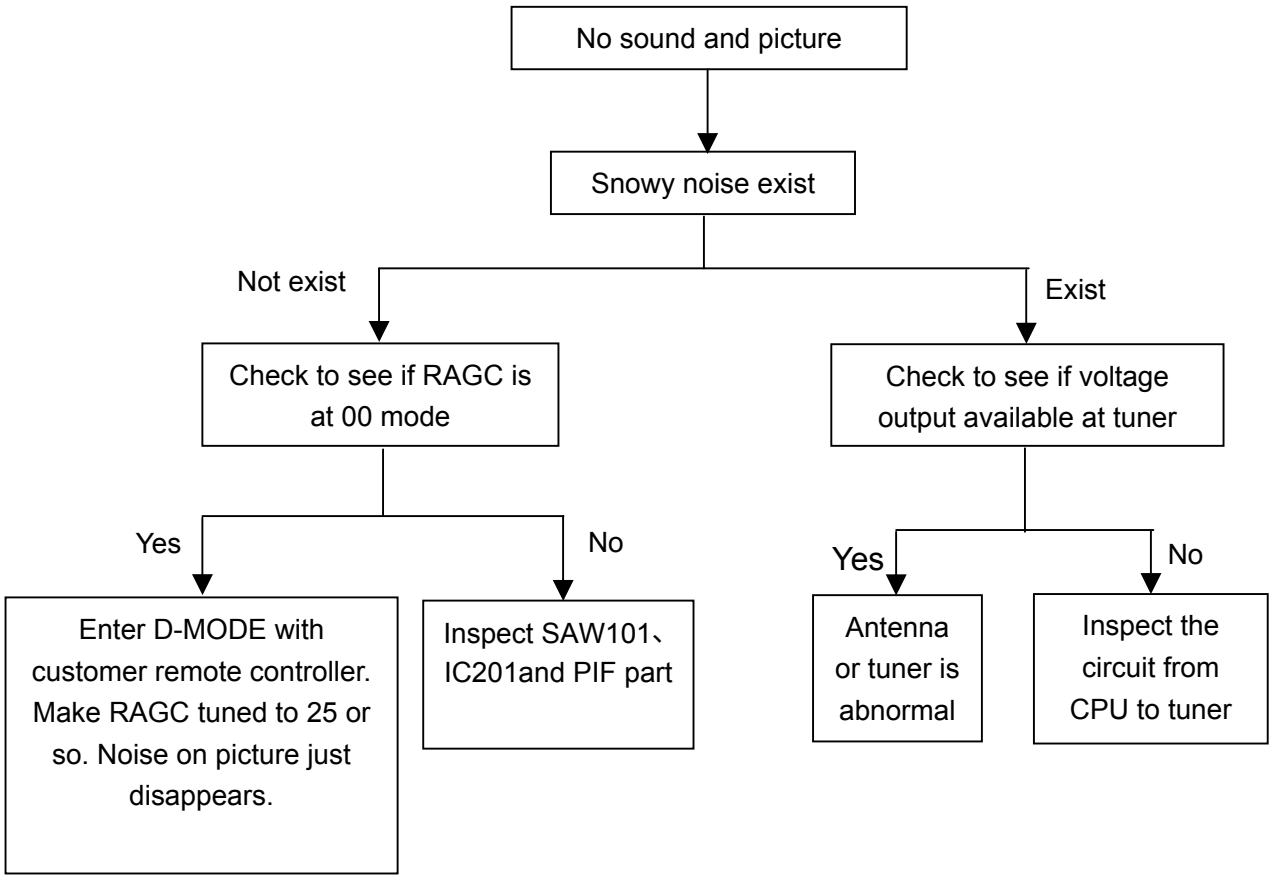
2


No raster
Whether G2 voltage is normal
Normal
Abnormal
Test filament voltage
Test the base voltage of Q402
Normal
Abnormal
Normal
Abnormal
Check the voltage of all pins of SK501
Heater Resistor open
Check to see if be voltage of Q402 is existed?
Check the circuit from pin15 of IC201 to Q402
Abnormal
YES
Normal
NO
Video amplifying board is abnormal
Inspect the circuit from pin51 、52、53 of IC201 to video amplifying
Check the voltage of Q402 collector is normal
InspectT402、R427 etc.
Higher
Lower
T401, D402 or C419,C420 are broken
Q402 is not well welded or open
Normal
Abnormal
Check to see if +8V voltage is normal at PIN 10 or 14 of IC201
Change wrong component or check
Normal
Abnormal
Check X201、IC201 and peripheral circuit of IC201
Check +8V ,+5V power

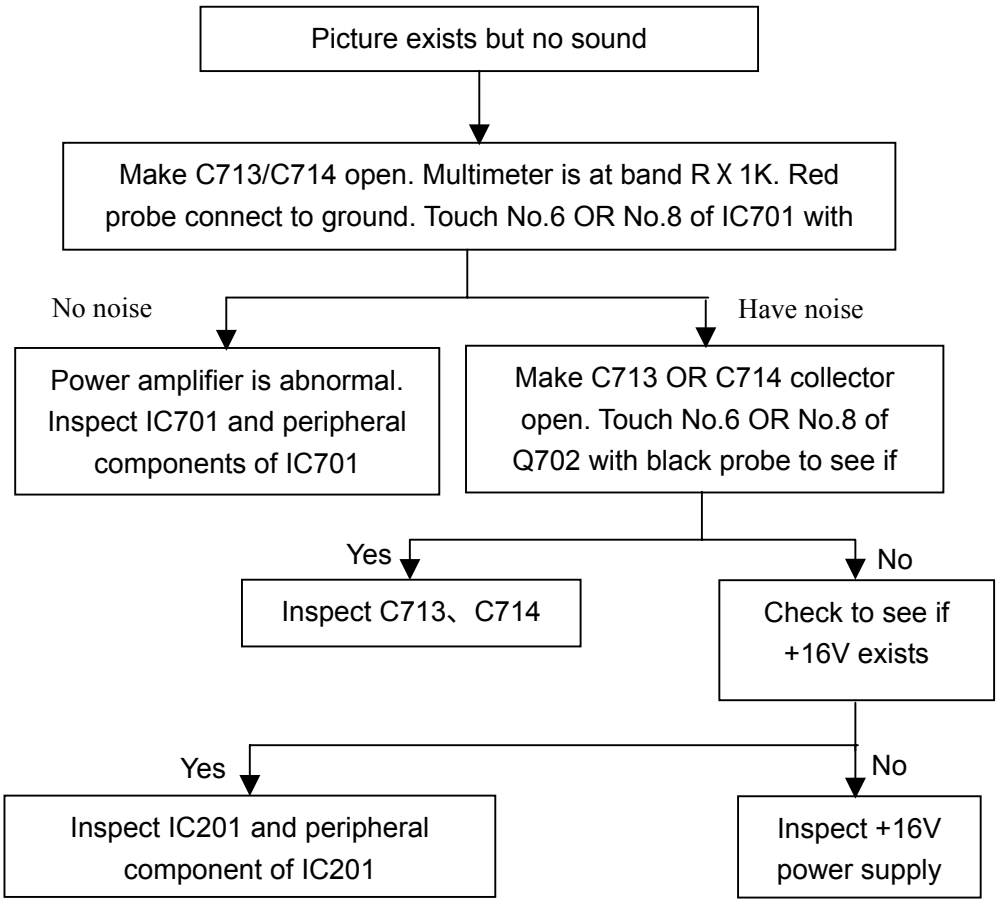
3


Horizontal bright line
Make R429 open. Multimeter is at range RX1K. Red probe connects to ground. Touch No.5 of IC401 with black probe. Bright line flashes for a moment
Yes
No
Check to see if the voltage of pin 11 and pin12 of IC201 is normal
Check to see if voltage of pin2 at IC401 is normal
Yes
No
Yes
No
Change IC201 and repair circuit
Inspect IC201 and peripheral components of IC201
Check to see if the deflection yorks are connected, C404 is open or weldless. Inspect peripheral component of IC401 and IC401 itself
Inspect +28V power supply
Normal

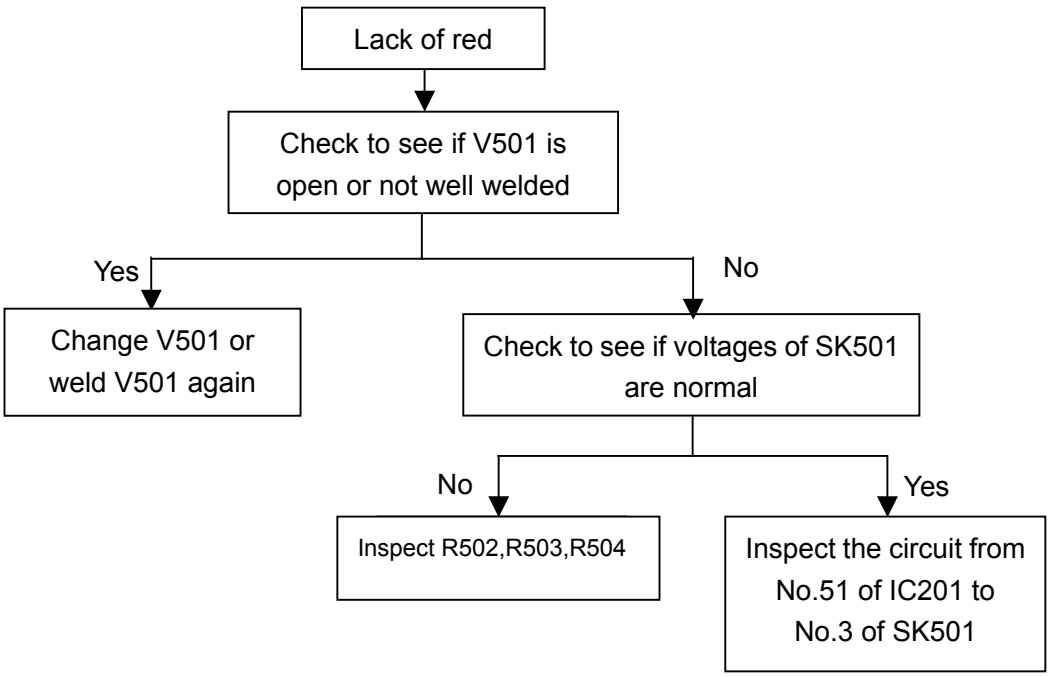
4.


No sound and picture
Snowy noise exist
Not exist
Exist
Check to see if RAGC is at 00 mode
Check to see if voltage output available at tuner
Yes
No
Yes
No
Enter D-MODE with customer remote controller. Make RAGC tuned to 25 or so. Noise on picture just disappears.
Inspect SAW101、IC201and PIF part
Antenna or tuner is abnormal
Inspect the circuit from CPU to tuner

5


Picture exists but no sound
Make C713/C714 open. Multimeter is at band R X 1K. Red probe connect to ground. Touch No.6 OR No.8 of IC701 with
No noise
Have noise
Power amplifier is abnormal. Inspect IC701 and peripheral components of IC701
Make C713 OR C714 collector open. Touch No.6 OR No.8 of Q702 with black probe to see if
Yes
No
Inspect C713、C714
Check to see if +16V exists
Yes
No
Inspect IC201 and peripheral component of IC201
Inspect +16V power supply

6.


Lack of red
Check to see if V501 is open or not well welded
Yes
No
Change V501 or weld V501 again
Check to see if voltages of SK501 are normal
No
Yes
Inspect R502,R503,R504
Inspect the circuit from No.51 of IC201 to No.3 of SK501

Adjustable Items

P1：			
Items	Preset	Remark	Description
H PHASE 0 ~ 31	14	★	Horizontal shift
V SIZE 0 ~ 63	20	★	Vertical amplitude
V POS 0 ~ 7	2	★	Vertical shift
V LIN 0 ~ 63	29	★	Vertical slop
V SC 0 ~ 63	32	★	S emendation
PARABOLA 0 ~ 63	32	★	S-correction
TRAPEXIUM 0 ~ 63	32	★	Echclon distortion correction
H SIZE 0 ~ 63	32	★	Horizontal amplitude
CORNER 0 ~ 63	40	★	TOP Vertical distortion correction
注：			

P2：			
Items	Preset	Remark	Description
RC 0 ~ 255	120	★	White point R
GC 0 ~ 255	120	★	White point G
BC 0 ~255	120	★	White point B
RD 0 ~ 127	70	★	Black level offset R
BD 0 ~ 127	75	★	Black level offset B
SB 0 ~ 127	47	★	Aassistant brightness adjust
VK 0 ~ 1	0	★	Horizontal line choice [field surge stop choice]
WB BRI 0 ~ 127	47	★	Horizontal line brightness
P3：			
Items	Preset	Remark	Description
RB YUV -128~ 128	0	◆	IN YUV，Black level offset R
GB YUV -128~ 128	0	◆	IN YUV，Black level offset G
BB YUV -128~ 128	0	◆	IN YUV，Black level offset B
RD YUV -128~ 128	0	◆	IN YUV，White point R
BD YUV -128~ 128	0	◆	IN YUV，White point B
CR PEDDOT 0~15	8	◆	CR benchmark voltage adjust
CB PEDDOT 0~15	8	◆	CB benchmark voltage adjust
CRCB PED ON 0~1	1	◆	YUV benchmark voltage switch
CRCB GAIN UP 0~1	0	◆	YUV benchmark voltage plus

P4：			
Items	Preset	Remark	Description
VIF VCO OK	OK	◆	Picture IF adjust
S TRAP OK	OK	◆	Sound frequency adjust
RF AGC 0 ~ 127	35	◆	AGC adjust
VIDEO LVL 0 ~ 7	7	◆	Video demodulation output voltage control

P5：			
Items	Preset	Remark	Description
OSD HP 0 ~ 63	35	◆	OSD Horizontal vision position adjust
OSD VP 0 ~ 31	21	◆	OSD Vertical vision position adjust
H TONE 0 ~ 1	0	◆	Translucence ON-OFF
A OSD 0 ~ 1	0	◆	A/D OSDchoice; 0 = D OSD; 1 = A OSD;
OSD L 0 ~ 1	0	◆	D OSD output voltage choice; 0 = 70%; 1 = 90%
TITLE 0 ~ 127	57	◆	OSD title color choice
MENU 0 ~ 127	79	◆	OSD color choice
MENU HL 0 ~ 127	57	◆	OSD pitch on color choice

P6：			
Items	Preset	Remark	Description
ENG 0 ~ 1	1	№	English OSD ；ON = Y；OFF = N
FRE 0 ~ 1	1	№	French OSD ON = Y；OFF = N
SPA 0 ~ 1	1	№	Spanish OSD ON = Y；OFF = N
POR 0 ~ 1	0	№	Portugal OSD ON = Y；OFF = N
DVD MD 0 ~ 3	1	№	DVD signal format，0:CVBS；1:YC；2:YUV；3：hold
DVD OFF T 0~ 127	0	№	Power off DVD off delay time
2DVD BLK T 0~ 255	70	№	Tv to DVD black screen time

P7：			
Items	Preset	Remark	Description
ON DLY T 0 ~ 15	6	№	Power on black screen time；0-15s
AVS MUTE TIM 0 ~ 255	30	№	Change channal black screen time;10ms
LOGO COLOR 0 ~ 7	1	№	Label color choice
LOGO 0 ~ 1	0	№	Label choice ON-OFF ON =Y; OFF =N
INT AUDIO 0 ~ 1	1	№	Inside volume cortrol choice ;ON = IN ;OFF = OUT PWM
BTSC 0~1	0	◆	MTS ON-OFF
FAC SW 0 ~ 1	0	№	Foctory adjust hotkey；ON = Y；OFF = N
POW MD 0~3	0	№	Power 0=standby，1=power ON，2=memory，3=else
C_10164/5	070119	№	ATV software edition

P8：			
Items	Preset	Remark	Description
AUTO/N/PM/PN 0 ~ 1	1	◆	AUTO/N/PM/PN function choice
AUTO/N/N4/P 0 ~ 1	0	◆	AUTO/N/PM/PN function choice
PAL 0 ~ 1	0	◆	PAL；0 = N；1 = Y
NTSC 0 ~ 1	1	◆	NTSC；ON = Y；OFF = N
N443 0 ~ 1	1	◆	NTSC4.43；ON = Y；OFF = N
P358 0 ~ 1	0	◆	3.58PAL；0 = N；1 = Y
PAL M 0 ~ 1	0	◆	PAL – M；ON = Y；OFF =N
PAL N 0 ~ 1	0	◆	PAL-N；ON = Y；OFF = N

P9：			
Items	Preset	Remark	Description
AV2 0 ~ 1	1	★	AV2；1= Y；0 = N
YUV 0 ~1	0	★	YUV；1 = Y；0 = N
DVD 0 ~ 1	0	★	DVD；1= Y；0 = N

P10：			
Items	Preset	Remark	Description
Y DL 0 ~ 7	5	№	Brightness signal delay time adjust
Y LPF 0 ~ 1	0	№	Brightness signal output low pass choice switch;0 = flat out; 1 = low out(fc = 700kHz)
BLK STE OFF 0 ~ 1	0	№	Black voltage extend function switch; 0 = ON; 1=OFF
GAMMA 0 ~ 3	0	№	GAMMA adjust control; 0 = OFF; 1~3 = ON(3 mode)
ABCL 0 ~ 1	0	№	AUTO brightness and contrast limit; 0 = AUTO contrast limit; 1 = AUTO brightness and contrast limit
ABCL GAIN 0 ~ 1	0	№	AUTO brightness and contrast limit plus switch; 0 = low; 1 = high

U DL	0 ~ 3	3	№	U signal delay adjust
V DL	0 ~ 3	0	№	V signal delay adjust
LCNR	0 ~ 63	32	№	Down pillow shape distortion

P11：				
Items		Preset	Remark	Description
C TRAP	0 ~ 3	2	№	Colour trap wave adjust
H VCO	0 ~ 7	3	№	Row frequency adjust
SIF BFP	0 ~ 3	0	№	SIFstrap pass width choice
SIF45 G DN	0 ~ 1	0	№	4.5Mhz sound plus attenuation switch； 0 = normal； 1 = attenuation。
STRAP OFF	0 ~ 1	0	№	Sound trap wave switch
AFC1 UP 1	0 ~ 1	1	№	Level AFC1 plus adjust
AFC1 UP 2	0 ~ 1	1	№	Level AFC1 plus adjus
AFC2 DOWN	0 ~ 1	0	№	Level AFC2 plus adjus
AFC2 UP	0 ~ 1	1	№	Level AFC2 plus adjus

.

5. ICs functional description

1. IC201 R2J10165GC

SYMBOL	PIN	DESCRIPTION
SP00/14bPWM	1	SP00/14bPWM
SP01/PWM	2	SP01/PWM
SP02/PWM	3	SP02/PWM
SP03/PWM	4	SP03/PWM
TEST0	5	TEST0
P04/AD2	6	P04/AD2
P05/AD1	7	P05/AD1
P06/TIM31	8	P06/TIM31
AFT(AD0)	9	SIF auto phase control
DEF VCC(8.0V)	10	8V POWER
V RAMP(+)	11	V RAMP(+)
VRAMP CAP	12	VRAMP CAP
AFC 1 FIL	13	SIF auto phase control filter
DEF VCC(5.0V)	14	5V POWER
H OUT	15	Horizontal SIGNAL OUT
FBP IN	16	FBP IN
DEF GND	17	GND
VRAMP AGC	18	VRAMP AGC
Cb IN YcbCr	19	Cb IN YcbCr
Cr IN YcbCr	20	Cr IN YcbCr
C-APC	21	C-APC
XTAL	22	XTAL
CHROMA GND	23	CHROMA GND
Y SW OUT	24	Y SW OUT
TEST/EW OUT	25	TEST/EW OUT
MCU 5.7 VDD OUT	26	MCU 5.7 VDD OUT
PAL ID FIL	27	PAL ID FIL
8.7V REG OUT	28	8.7V POWER OUT
EXT AU(L)IN/EXT AU2 IN	29	EXT AU(L)IN/EXT AU2 IN
EXT2 IN/C IN YC	30	EXT2 IN/C IN YC
CHROMA VCC(5.0)	31	CHROMA VCC(5.0)
EXT 1 IN/YIN YC/YIN Y CbCr	32	EXT 1 IN/YIN YC/YIN Y CbCr
5.7V REG OUT	33	5.7V POWER OUT
VIF VIDEO OUT	34	VIF VIDEO OUT
VIF GND	35	GND

VIF APC	36	VIF APC
RF AGC	37	RF AGC
VIF IN2	38	VIF IN2
VIF IN1	39	VIF IN1
VIF AGC	40	VIF AGC
VIF VCC F/B	41	VIF VCC F/B
VIF VCC(5.0V)	42	5.0V POWER
EXT AU（R) IN/EXT AU1 IN	43	EXT AU（R）IN/EXT AU1 IN
AU BYPASS	44	AU BYPASS
SIF MIX F/B	45	SIF MIX F/B
AU ATT（R）OUT/ATT OUT	46	AU ATT（R）OUT/ATT OUT
DIRECT OUT	47	DIRECT OUT
AU ATT（L）OUT/ATT OUT	48	AU ATT（L）OUT/ATT OUT
ACL/ABCL	49	ACL/ABCL
HI VCC（8.0）	50	HI VCC（8.0）
R OUT	51	R OUT
G OUT	52	G OUT
B OUT	53	B OUT
VREG VCC（8.7V）	54	VREG VCC（8.7V）
MNITOR-OUT	55	MNITOR-OUT
MCU RESET	56	MCU RESET
P20	57	P20
P21	58	P21
P22	59	P22
HLF	60	HLF
VHOLD	61	VHOLD
CVIN	62	CVIN
P26/AD6	63	P26/AD6
AD6/P27	64	AD6/P27
P35/TIM21	65	P35/TIM21
CNVSS	66	CNVSS
TEST1 Note1	67	TEST1 Note1
TEST2 Note2	68	TEST2 Note2
VSS	69	VSS
FILT	70	FILT
VDD	71	VDD
P36	72	P36
P17/INT3/AD4	73	P17/INT3/AD4
P16/INT2/AD3	74	P16/INT2/AD3
P15/INT1	75	P15/INT1
P10	76	PIN 10
P11/SCL1	77	I^2C-bus clock line 1
P12/SCL2	78	I^2C-bus clock line 2
P13/SDA1	79	I^2C-bus data line 1
P14/SDA2	80	I^2C-bus data line 2

2. IC602 24C16

PIN	**Function**
1	GND
2	GND
3	Upper resistance
4	GND
5	SDA data wire
6	SCL clock wire
7	GND
8	+5V Power

3. IC701: Sound power amplify (TFA9800J)

Symbol	PIN	Function	Symbol	PIN	Function
-INV1	1	Non-inverting input 1	Vp	7	Supply voltage
SGND	2	Signal ground	M/SS	8	Mute/standby switch input
SVRR	3	Supply voltage ripple rejection output	-INV2	9	Non-inverting input 2
Out 1	4	Output 1			
PGND	5	Power ground			
OUT2	6	Output 2			

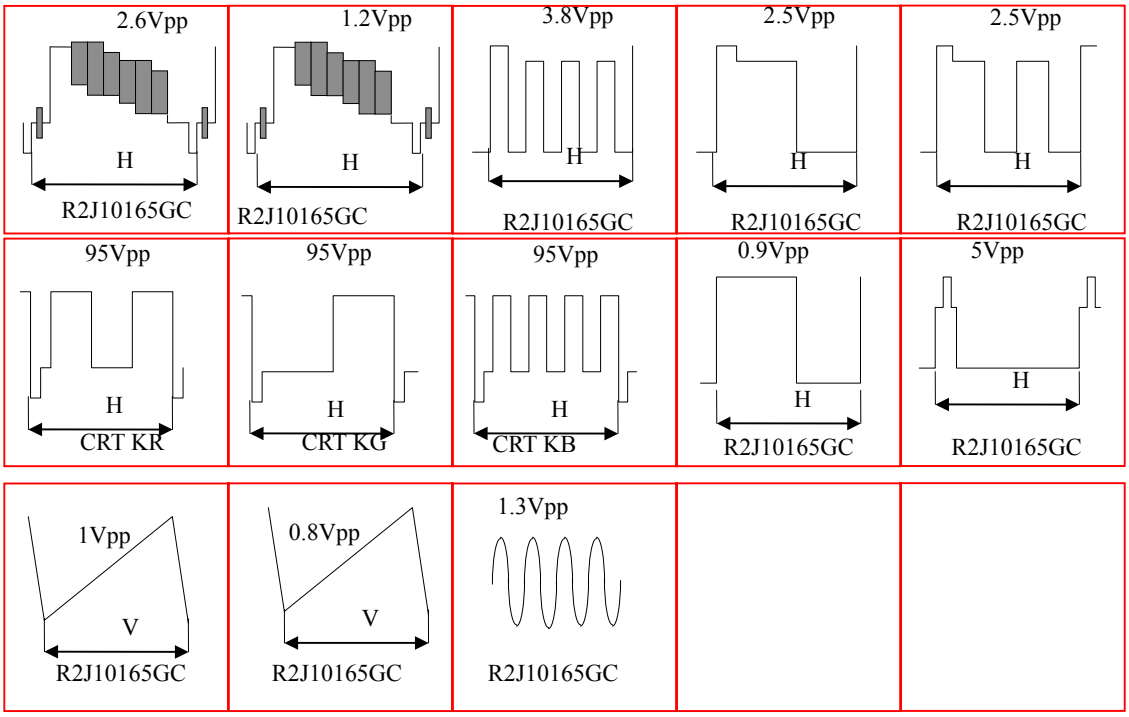
4. IC401: Vertical output (STV9302A()

Symbol	PIN	Function	Symbol	PIN	Function
INPUT	1	Inverting input	Poutput stage supply	6	Output stage supply
SUPPLY VOLTAGE	2	Supply voltage	Input	7	Non-inverting input
Flyback generator	3	Flyback generator			
GND	4	Ground or negative supply			
Output	5	Output			

5. U101：Tuner

PIN	Function	PIN	Function
1	Nc	7	+5V
2	Tu	8	IFA1
3	Rf agc	9	IF AGC
4	SCL	10	IFD 1OUT
5	SDA	11	IFD 2 OUT
6	Btl		

6. Test point Waveforms



7. IC voltages

R2J10165G

PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
V	0	0.02	4.9	0.03	0	4.72	0.04	0.15	2.05	8.04	2.99	2.36	3.2	5	0.83	0.93
PIN	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
V	0	2.04	1.15	1.15	2.97	3.2	0	3.76	3.91	5.59	2.28	8.73	3.29	1.97	5	2.73
PIN	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
V	5.68	2.86	0	2.74	0.17	1.47	1.47	2.53	3.09	5	3.3	3.45	2.4	3.43	3.15	3.43
PIN	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
V	2.47	8.03	2.57	2.49	2.59	8.87	0.42	4.9	4.94	4.95	3.82	1.96	0.33	2.9	4.95	4.94
PIN	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
V	4.95	0	0.16	4.95	0	1.76	4.95	4.95	4.94	4.83	0.03	4.95	3.52	3.7	3.58	3.73

STV9302A

PIN	1	2	3	4	5	6	7
V	2.993	26.8	14.57	0	1.96	26.05	2.991

TFA9800J

PIN	1	2	3	4	5	6	7	8	9
V	2.15	0	7.53	7.5	0	7.51	15.48	13.93	2.122

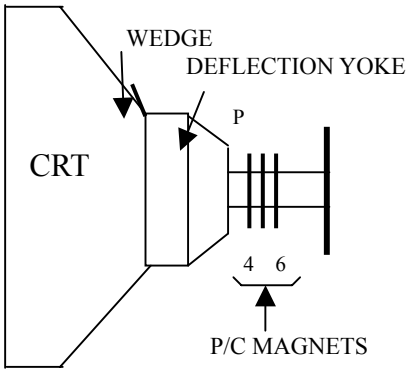
24C16

PIN	1	2	3	4	5	6	7	8
V	0	0	0	0	4.95	0	3.52	3.58

8. PURITY / CONVERGENCE ADJUSTMENT

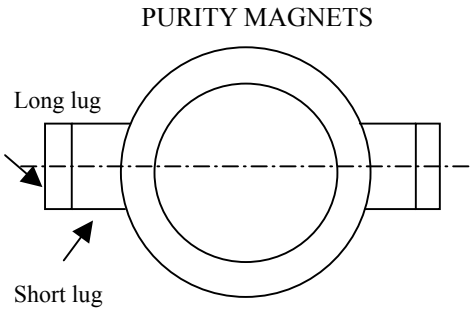
PURITY ADJUSTMENT

1. Demagnetize CRT with the demagnetizer.
2. Loosen the retainer screw of the deflection yoke.
3. Remove the wedges.
4. Input a green raster signal from the signal generator, and turn the screen to green raster.
5. Move the deflection yoke backward.
6. Bring the long lug of the purity magnets on the short lug and position them horizontally. (Fig2)
7. Adjust the gap between two lugs so that the GREEN RASTER will come into the centre of the screen. (Fig. 3)
8. Move the deflection yoke forward, and fix the position of the deflection yoke so that the whole screen will become green.
9. Insert the wedge to the top side of the deflection yoke so that it will not move.
10. Input a crosshatch signal.
11. Verify that the screen is horizontal.
12. Input red and blue raster signals, and make sure that purity is properly adjusted.



P: PURITY MAGNET
4: 4-POLES (convergence magnets)
6: 6-POLES (convergence magnets)

Fig. 1



Bring the long lug over the short lug and position them horizontally.

Fig. 2

(FRONT VIEW)

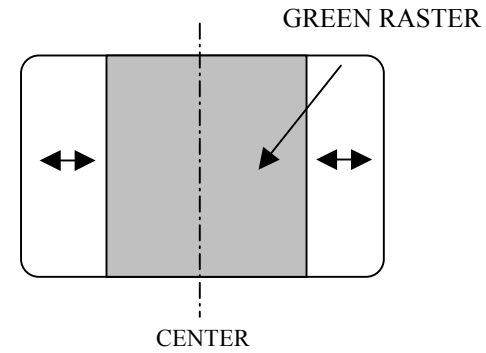


Fig. 3

STATIC CONVERGENCE ADJUSTMENT

1. Input a crosshatch signal.
2. Using 4-pole convergence magnets overlap the red and blue lines in the center of the screen (Fig. 1) and turn them to magenta (red/blue).
3. Using 6-pole convergence magnets overlap the magenta (red/blue) and green lines in the center of the screen and turn them to white.
4. Repeat 2 and 3 above, and make the best convergence.

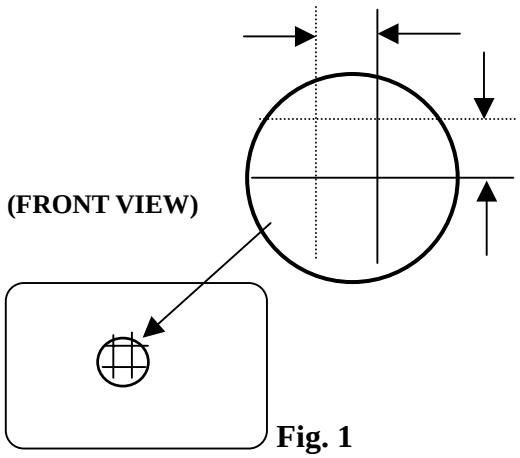


Fig. 1

DYNAMIC CONVERGENCE ADJUSTMENT

1. Move the deflection yoke up and down and overlap lines in the periphery. (Fig. 2)
2. Move the deflection yoke left to right and overlap the lines in the periphery. (Fig. 3)
3. Repeat 1 and 2 above, and make the best convergence.

(FRONT VIEW)

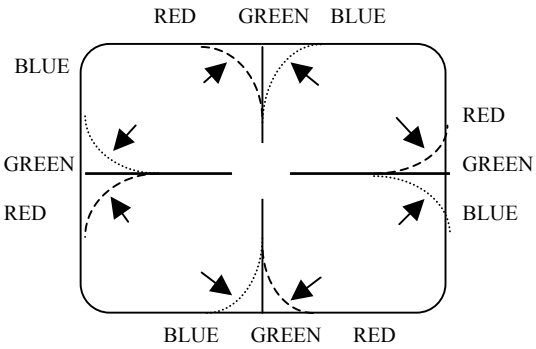


Fig.2

(FRONT VIEW)

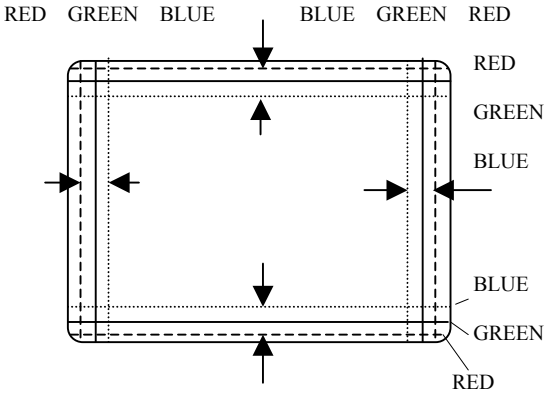


Fig. 3

After adjustment, fix the wedge at the original position.
Fasten the retainer screw of the deflection yoke.
Fix the 6 magnets with glue.

9. DVD Part: Introduction of MTK1389D maintenance

NOTE: MTK1389D is a type of LSIC for DVD decode .MTK1389D IC consists of RF,SERVO,DSP,DECODE,VIDEO DAC and AUDIO DAC.

1. Under normal power supply conditions, the maintenance plan for MT1389D mono-chip is: first the reset circuit resets the MT1389D, after the crystal oscillator circuit gave the clock signal to MT1389D, MT1389D will start the initialization check for Flash、E^2PROM、SDRAM, after everything is checked to be normal, it will start initialization check for built-in Audio DAC, servo and motor Driver IC .

2. If the all the a.m. parts are good, then MT1389D will send signal to motor Driver to drive the servo system, pick up then to generate DVD light for collection, tracing the main shaft to check if there is any disc, and confirm if it is CD format or DVD format disc. If the disc is in DVD format, the system will read the data from the disc directly; if it is in CD format built-in servo will drive the CD laser to send out CD light and read the data, the data then will be amplified through built-in RF amplifier and sent to MT1389D decode part for data processing, released by MPEG and resolved into video data and audio data, then they will be returned to analog signals through built-in VIDEO DAC、AUDIO DAC.

Decoder section

3. There is power supply, clock and reset, but the system does not work.

1) Check if all the address wires required for FLASH are exist, and if they are in normal status, especially check if the A0~A15 of FLASH have normal signals, if there aren't, then inspect MT1389D to see if there is faulty soldering. If there are normal signals at A0~A15, check if the address data signal of MT1389D and SDRAM is normal. If it is normal, then check the signal at A16~A19 of MT1389D; if there are also signals, then check the video output wires and AV filter circuit; if there is no signal, then check the corresponding pins of MT1389D to see if there is any short circuit, break or faulty soldering.

4. System in normal operation, but the audio has no sound.

1) Because the AUDIO DAC is built in MTK1389D IC.you need to check the lower passing amplifying circuit and the MUTE circuit at the back of the LPF circuit. Also check if there is any power supply to the LPF circuit.

2) Check if the power supply voltage required for playing is at normal level.

Servo Section

5. After the LOGO of the machine shows normally, there is no OSD display. This problem mainly is caused by the abnormality built-in RF and servo, possible problems may be:

1) Built in RF and its surrounding circuits have problems.

2) Servo part of MT1389D has problems.

6. OSD display is normal, while there is no action of servo part (feeding motor does not work, main shaft does no turn, possible fault status are:

   1) The corresponding signals giving by MT1389D to DMSO、FMSO are missing, the reason may be the problem of MT1389D or the communication between MT1389D and motor Driver IC SA5668.

   2) Not output from Motor Driver, the reason may be the problem on motor Driver or its corresponding circuit.

7. Servo part in good status, while there is no pick up action (no light, no focus)

   1) No light, check the power supply (power supply for pick up), or the light producing driving circuit to see if they are in normal status.

   2) No focus, check MT1389D to see if there is signal output from FOSO、TRSO.
   Secondly, check motor driver to see if there is F+、F-、T+、T-signal output.
   Thirdly, check the external corresponding circuit of the motor driver to see if there is any problem.

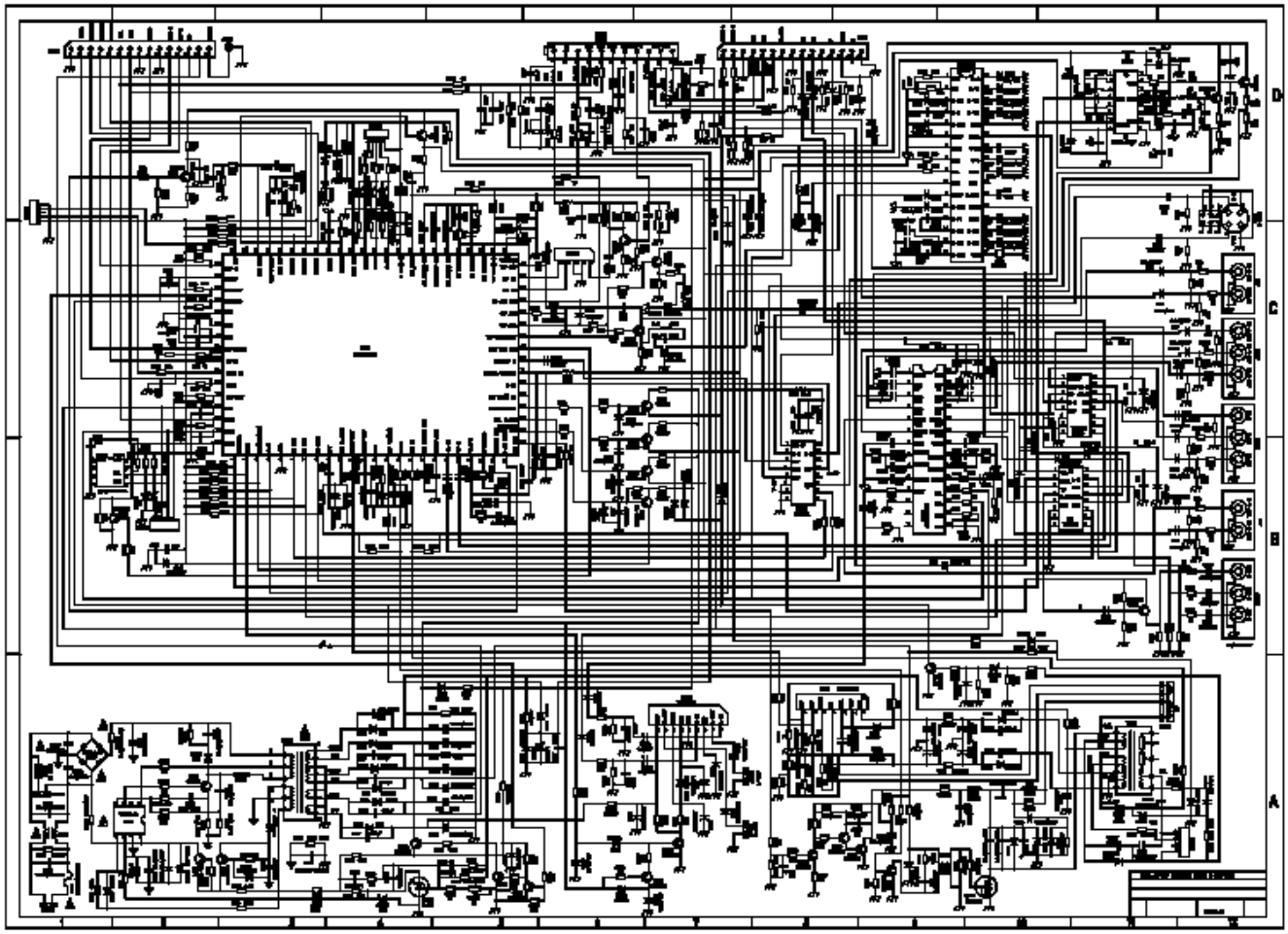
8. All the servo part has action, while it cannot read out the disc

   1) Check MT1389D if there is RF net picture output, if there isn't, then it must be the problem of MT1389D and external surrounding circuits, it there is output, then it might the problem of MT1389D and its surrounding circuits.

   2) There is RF signal，but not in normal status，then check MT1389D and surrounding circuits.

   3) Everything is normal, but the disc cannot be read out, check MT1389D and its surrounding circuit

10.Circuit Diagram



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